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FIG. 1

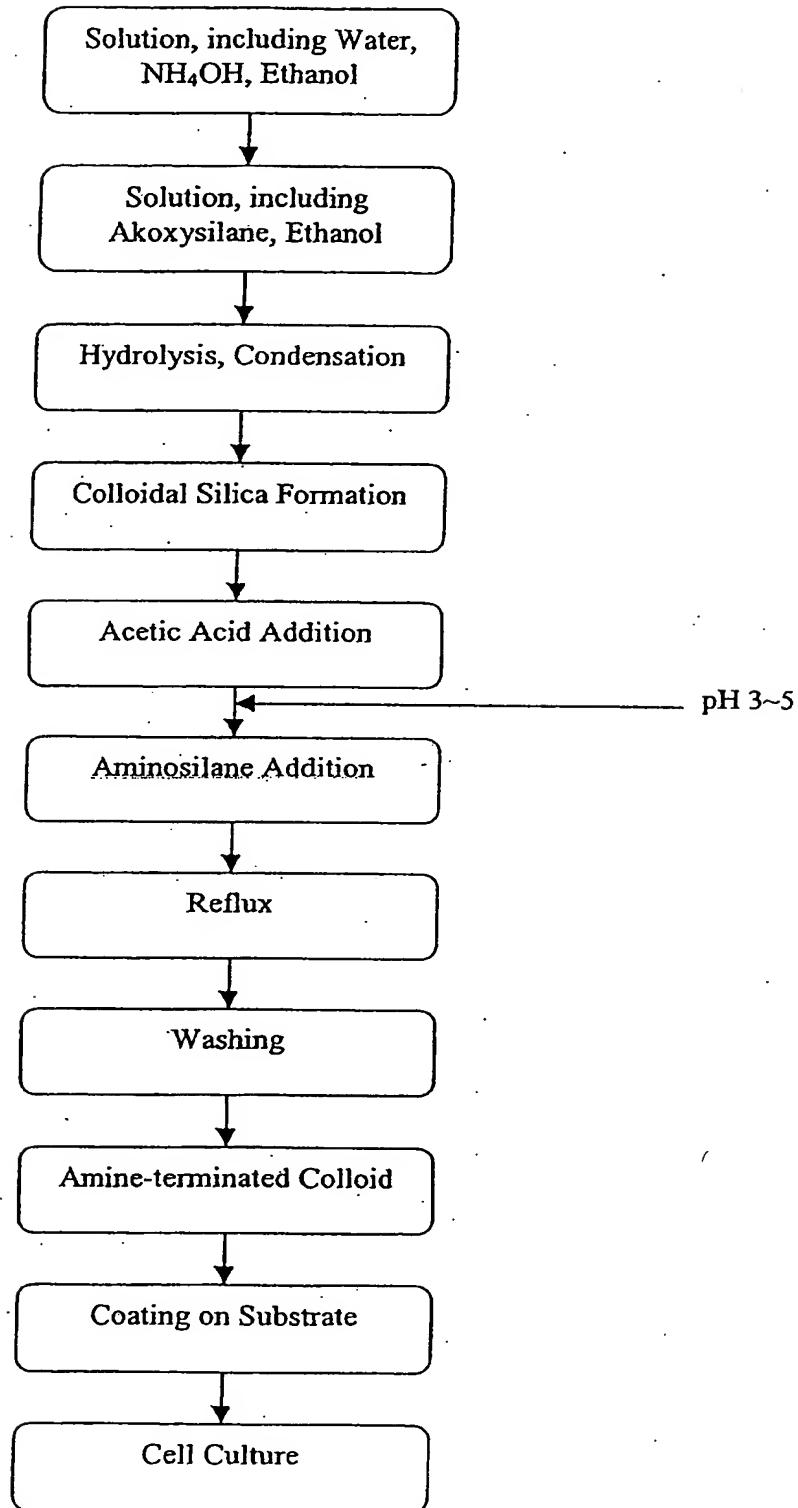
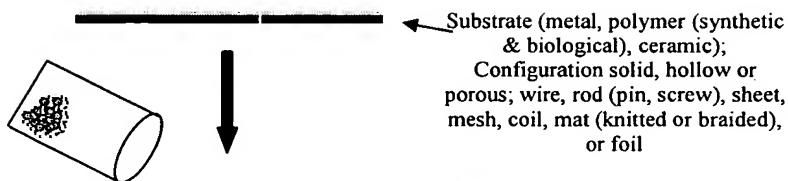




FIG. 2

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Filed: September 22, 2003
Customer No. 03000
For: ENGINEERING OF MATERIAL SURFACES
Docket No.: T1118/20071
Sheet 2 of 8

Step I



Substrate (metal, polymer (synthetic & biological), ceramic);
Configuration solid, hollow or porous; wire, rod (pin, screw), sheet, mesh, coil, mat (knitted or braided), or foil

X = functional group, peptide, protein, oligo, avidin, biotin etc.
Derivatized Particle

Step II

Spin coating, dip coating, atomizing (spraying)

Step III



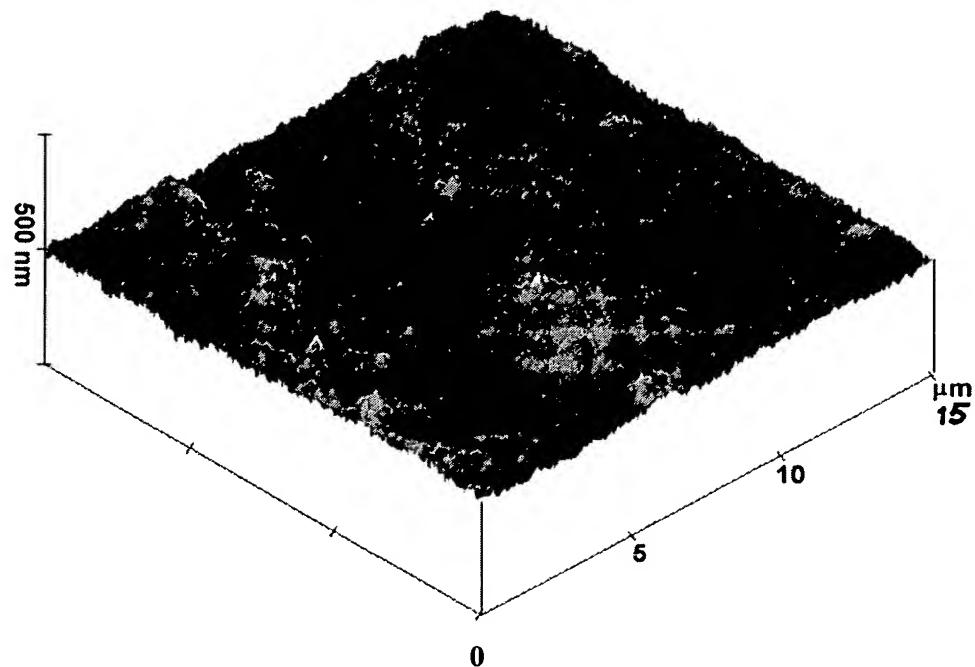
Step IV: Repeat I - III with the same or different particle



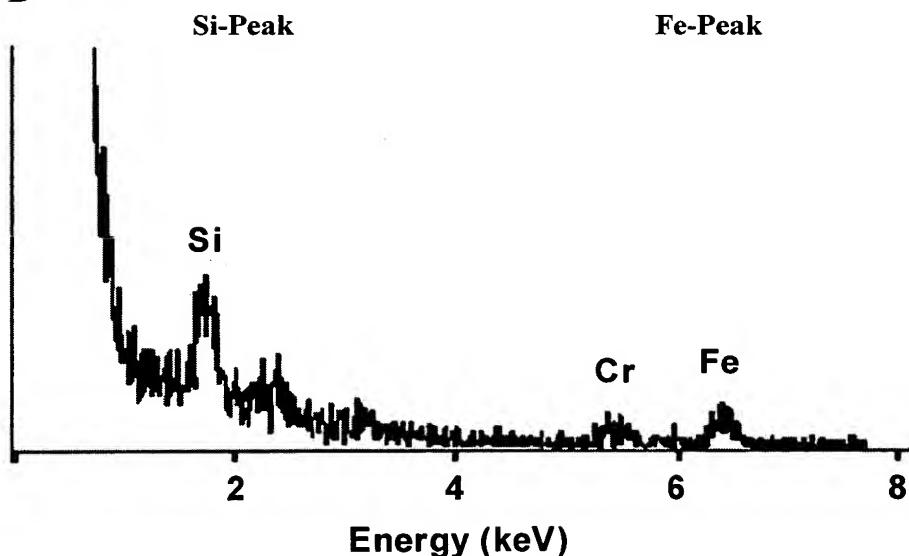
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Customer No. 03000
For: ENGINEERING OF MATERIAL SURFACES
Docket No.: T1118/20071
Sheet 3 of 8

FIG. 3

A



B

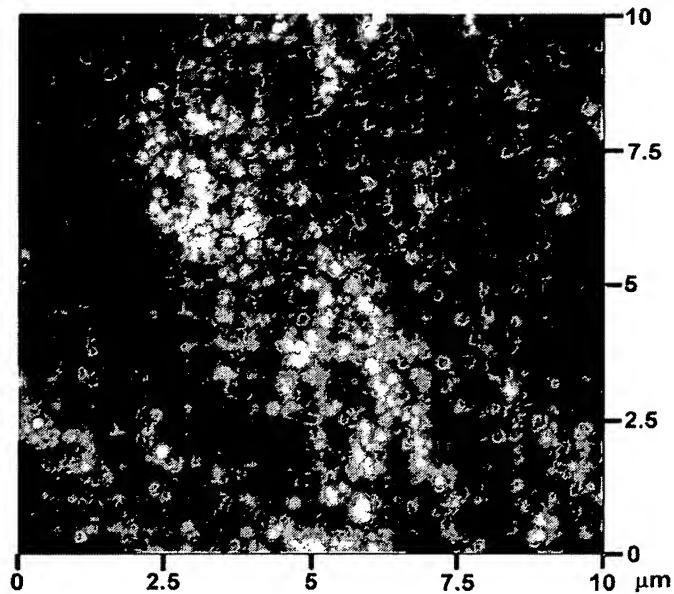


Type 316-L stainless steel surface modified with silica nano particles (A) AFM image showing the presence of stacks of nano particles and (B) EDAX spectrum of the surface confirming the presence of Silica.



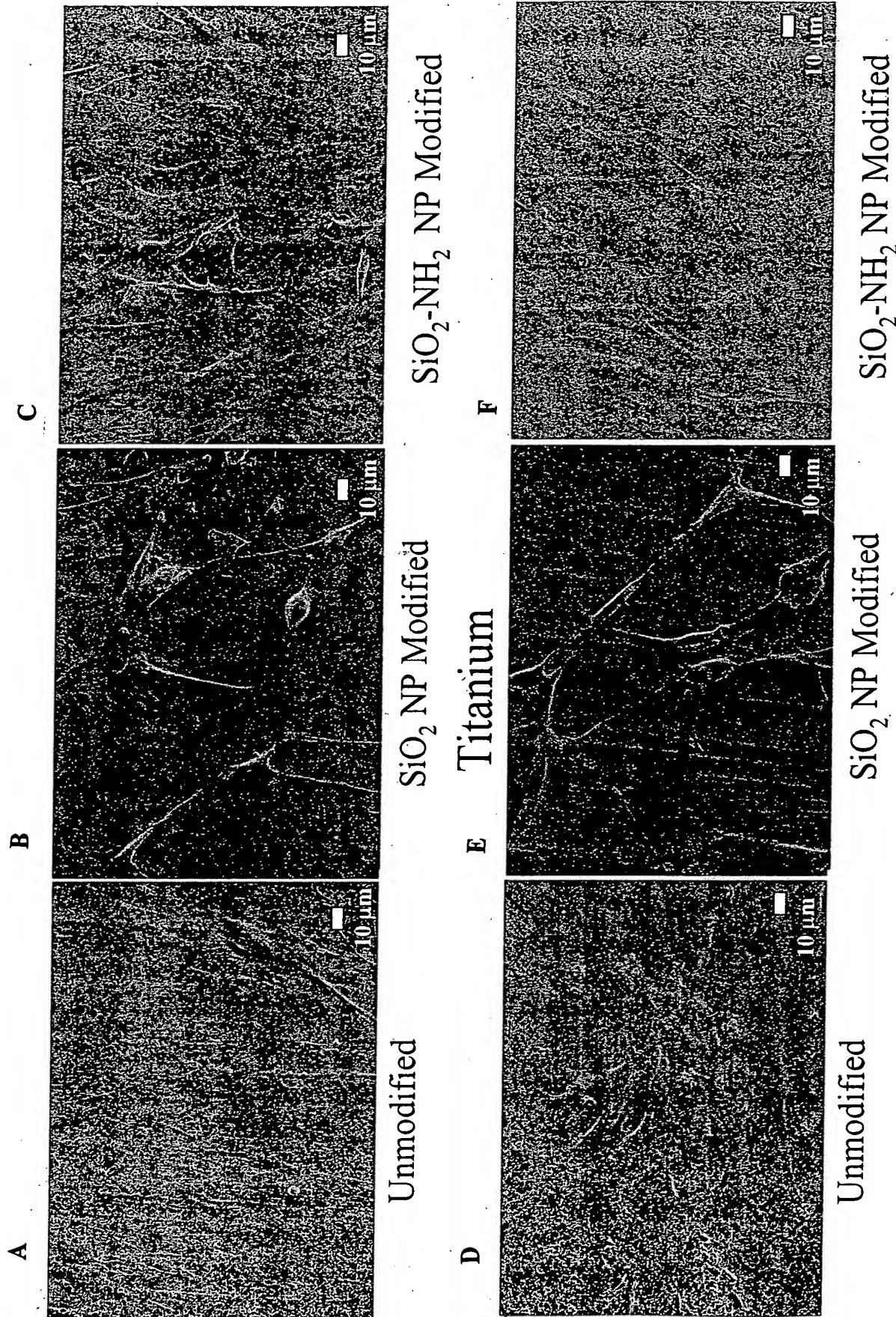
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For: ENGINEERING OF MATERIAL SURFACES
Docket No.: T1118/20071
Sheet 4 of 8

FIG. 4



Stainless Steel

FIG. 5



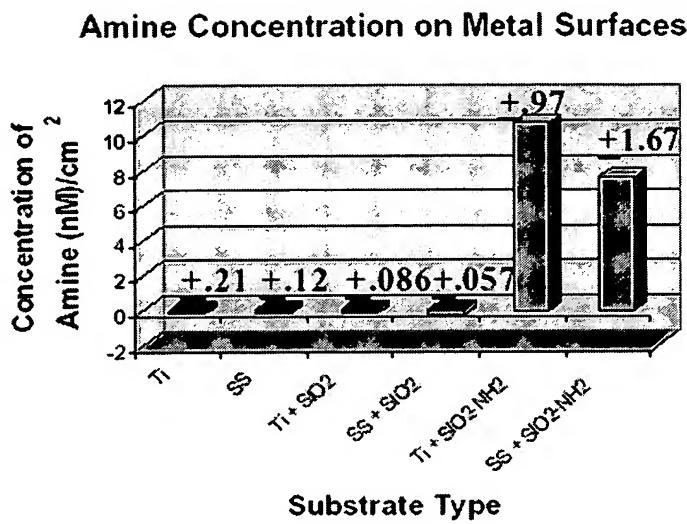
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Customer No. 03000
For: ENGINEERING OF MATERIAL SURFACES
Docket No.: T1118/20071
Sheet 5 of 8

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FIG.6

Functional Group Quantification on Modified Metal Surfaces

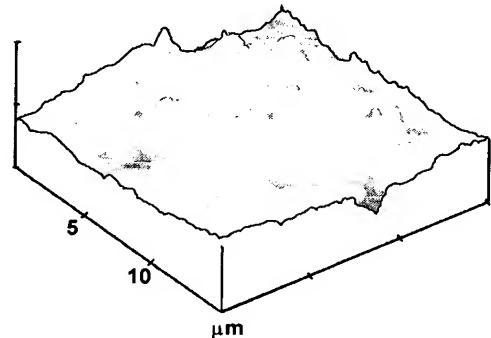




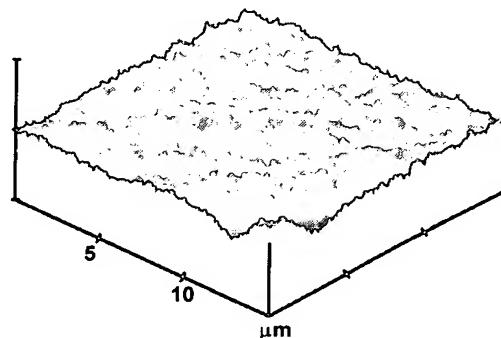
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Customer No. 03000
For: ENGINEERING OF MATERIAL SURFACES
Docket No.: T1118/20071
Sheet 7 of 8

FIG. 7

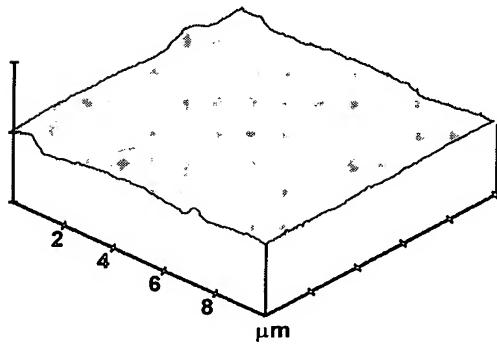
Atomic Force Microscope Images of Metal and Polymer Surfaces Modified Using Functionalized Silica Nano-particles (FSNP)



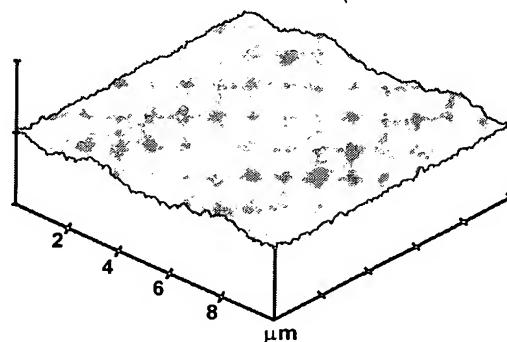
Titanium



Titanium + FSNP



Polyurethane

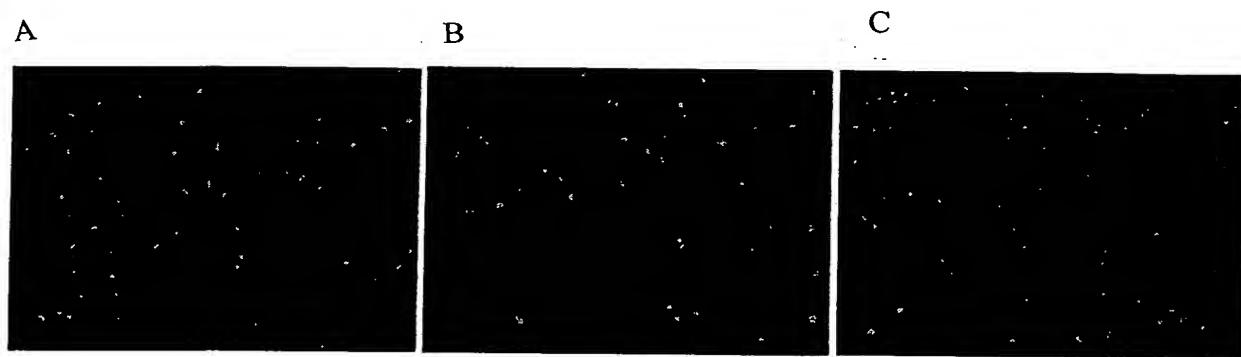


Polyurethane + FSNP



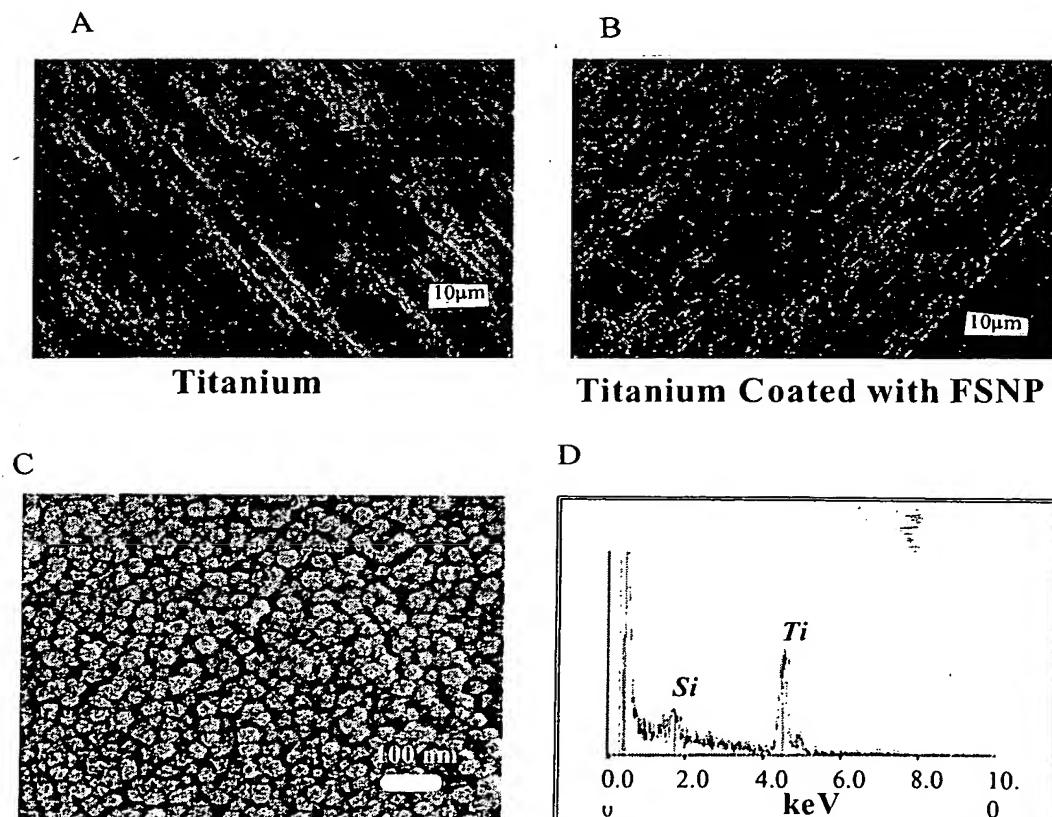
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Docket No.: T1118/20071
Sheet 8 of 8

Fluorescent Images of DAPI (nuclear stain) Stained MC3T3-E1 cells on Polyurethane (PU) Surfaces



Polyurethane (PU) PU + SiO₂ Nanoparticle PU + FSNP

FIG. 9. Characterization of FSNP Modified Surface Using Scanning Electron Microscopy. (Non-limiting example)



FSNP on Titanium Surface

EDAX Spectrum